

1951

Hand Hygiene, Gowning, and Gloving Practices in the Perioperative Setting



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in the Perioperative Setting

AORN Independent Study Activity
AORN Video with Study Guide

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Purpose/Goal

The purpose of this study guide and accompanying video is to present the rationale and procedures for scrubbing, gowning, and gloving for surgical team members preparing to participate in an invasive procedure. The surgical team's careful attention to aseptic practices and standard precautions is a crucial factor in protecting patients from surgical site infections and team members from exposure to pathogens.

Objectives

After viewing the video and completing the study guide, the participant will be able to:

1. discuss the principles of aseptic technique as applied to scrubbing, gowning, and gloving
2. describe the surgical hand scrub/rub procedure
3. describe the correct method for donning gowns and gloves
4. describe the correct method for removing gowns and gloves; and
5. identify the sterile areas of the gown and glove.

Introduction

Scrubbing, gowning, and gloving of surgical personnel are important elements in the preparation of an aseptic environment for the patient and surgical team.

Scrubbed personnel don sterile gowns and sterile surgical gloves over surgical attire to prevent microorganisms on their hands and clothing from being transferred to patients undergoing invasive procedures. The sterile gown and gloves also serve to protect the hands and clothing of surgical personnel from microorganisms that are present in the patient or the environment.

Although the sterile gown and gloves provide a sterile boundary, effective hand hygiene must be performed before donning a sterile gown and gloves. This creates an additional level of protection in the event of a break in the integrity of the gown or gloves.

Hand hygiene is universally accepted as the primary method of decreasing healthcare-associated infections (HAIs), a priority for all health care personnel. Undesirable outcomes of acquiring HAIs include increased patient morbidity, mortality, length of stay, and cost of care. Equally important is the increase in the level of pain and suffering that the patient may experience.

Although the skin can never be sterilized hand hygiene, hand washing, and surgical hand scrubs/rubs are the most effective way to prevent and control infections by making the skin surgically clean. They are also the least expensive means of achieving both of these goals.

Surgical Attire

A preliminary step in the processes of scrubbing, gowning, and gloving is ensuring that proper surgical attire is worn.

All members of the surgical team are responsible for knowing and following facility policies on surgical attire. These policies should include the following AORN recommended practices;¹

- Surgical attire should be clean, freshly laundered, and facility approved for use only within the surgical suite.
- Surgical attire should be changed daily or more frequently, if it becomes soiled.
- Soiled surgical attire should be placed in designated containers after use.
- Home laundering is not recommended because of the potential for contamination of the home from the health care facility or contamination of the health care facility from the home.
- Unscrubbed personnel should wear buttoned or snapped long sleeved jackets to contain bacterial shedding from the arms.
- The surgical attire selected should completely cover other garments worn beneath them.
- If a two-piece pantsuit is worn, the top of the scrub suit should be secured at the waist, tucked into the pants, or fit close to the body
- Personnel should cover all head and facial hair, including sideburns and necklines, when in the semi-restricted and restricted areas of the surgical suite.
- Masks must be worn in the restricted areas of the OR suite when open sterile items and equipment are present. The mask should fully cover both nose and mouth and be secured to conform to facial contours and prevent venting.

In addition to providing proper surgical attire, personal protective equipment (PPE) should be available and used to protect personnel from hazardous conditions in the semi-restricted and restricted areas of operating suite. This may include:

- gloves
- gowns and/or aprons that are liquid resistant
- protective eyewear/shield
- masks, and
- fluid-resistant shoe covers to be worn when splashes or spills can be reasonably anticipated.

Hand Hygiene

After donning surgical attire, personnel must perform hand hygiene. The purpose of hand hygiene is to remove soil and transient microorganisms from the hands. This is accomplished using mechanical friction (i.e., physically rubbing, washing, and rinsing of the hands).

The term hand hygiene is defined as all measures related to hand condition and decontamination. Decontamination of the hands is the first and most important step in hand hygiene and can be accomplished by several methods:

- **hand washing** using
 - soap and water;
 - antiseptic soap and water; or
 - antiseptic hand rub, if visible soil is not present
- **surgical hand scrub/rub** using
 - water-aided brushless surgical antiseptics;
 - waterless, brushless surgical antiseptics; or
 - a traditional surgical hand scrub using a sponge

Hand hygiene is important, as it is a primary means of removing transient and resident microorganisms commonly found on the human hands. Resident microorganisms are very adherent and resistant to removal by simple hand washing. However, hand washing can reduce the number of these organisms and, when combined with antiseptic agents, can inactivate or inhibit microbial growth.

General hand hygiene (i.e., hand washing) should be performed by all health care workers at specific times during the workday. These times are:

- upon arrival at the health care facility,
- before and after every patient contact,
- before putting gloves on and after removing gloves or other PPE,
- any time there is a possibility that there has been contact with blood or other potentially infectious materials or surfaces,
- before and after eating,
- before and after using the restroom,
- before leaving the health care facility, and
- whenever hands are visibly soiled.

There are several hand hygiene practices that are **crucial** components of general hand hygiene. They are:

- Natural fingernails should be kept short, clean, and healthy.
- Chipped fingernail polish should be removed.
- Artificial nails should not be worn. Studies have shown that the type and amount of potentially pathogenic bacteria cultured from the fingertips of personnel wearing artificial nails is greater than from the fingertips of personnel with natural nails, both before and after hand washing.²
- Health care personnel with breaks in their skin may be at risk for acquiring or transmitting infection to patients. Health care personnel with cuts, abrasions, weeping dermatitis, or fresh tattoos on exposed skin should not provide direct patient care.
- Rings should not be worn in the perioperative setting as wearing rings may result in colonization with both gram-negative and gram-positive pathogens.
- Watches and bracelets should be removed before performing hand hygiene.
- If lotions are used, they should be chosen based on infection control practices and approved by infection control professionals. In addition, they should be compatible with the antimicrobial hand agent and gloves being used.
- If hands are visibly soiled, they should be washed as soon as possible with plain or antimicrobial soap and water.

Process for washing visibly soiled hands:

- Wet hands with warm water.
- Apply soap to the hands according to the manufacturer's written instructions.
- Rub hands together vigorously for at least 15 seconds, making sure to cover all surfaces of the hands and fingers.
- Rinse hands with warm water and dry thoroughly with a disposable towel.
- Use the towel to turn off the faucet.

When soil is not present, an alcohol based hand rub can be used. Hand rubs should be performed in the following manner:

- Follow the manufacturer's written directions for use of product.
- Use the recommended amount of hand rub product.
- Rub hands covering all surfaces including the backs of hands, fingertips, inner webs, and palms.
- Rub hands until they are dry.

It is important that a sufficient amount of product is used to ensure antimicrobial effect.

Surgical Hand Scrub

Objective

The objective of the surgical hand scrub is to reduce transient and resident flora with the ultimate goal of reducing HAIs. The reduction of microorganisms on the skin reduces the hazards of microbial contamination at the surgical site. Although sterilization of the skin is not possible, the hand scrub makes the skin surgically clean.

Control of Microorganisms

The surgical hand scrub uses a mechanical and chemical process to control transient and resident microorganisms on the skin. People acquire transient organisms by direct contact. These organisms typically attach loosely to the skin surface. During the surgical hand scrub, the mechanical friction of the scrub process removes almost all of the transient organisms. Resident organisms are flora that exist below the skin surface in hair follicles, sebaceous glands, and sweat glands. They are adherent and resistant to removal. During the surgical scrub, the chemical action of the antimicrobial or antiseptic agent reduces and neutralizes resident skin flora.³

Surgical Hand Scrub Preparations

In addition to wearing appropriate surgical attire, the scrub person should wear additional PPE including:

- headgear that covers all hair including sideburns and neckline. Complete coverage of hair is necessary because uncovered hair acts as a filter and collects bacteria. Shedding from the hair can affect surgical wound infections.¹
- a mask that covers the mouth and nose completely. A mask contains and filters droplets and microorganisms expelled through the mouth and nose.¹
- protective eyewear or a face shield to reduce the possibility of contamination of the scrubbed person's mucous membranes of the mouth, nose, and eyes.
- shoes that provide protection. Shoe covers should be worn when exposure to blood or potentially infectious materials is anticipated.

Before the surgical scrub the scrub person should:

- tuck the scrub shirt into his or her trousers to prevent the shirt from getting wet and to reduce the risk of scrubbed hands and arms becoming contaminated by contact from the garment.
- fit the surgical face mask snugly and comfortably over the nose and mouth so that it does not vent at the sides.
- don clean protective eyeglasses or face shield. Use of protective eyewear or face shields prevents eye and mucous membrane contamination from splashing or spraying.
- ensure that all rings and watches are removed.

Inspecting the Hands and Arms

The scrub person should inspect his or her hands and forearms for cuts and abrasions before beginning the surgical scrub. The skin must be free of open lesions or cracks. Broken skin increases the risk of infection to both the patient and the surgical team member.² The serum in lesions is a medium for microorganism growth.

Fingernails should be short, clean, and healthy. The cuticles should also be clean and in good condition.³ Surgical staff members should follow their facility's policy regarding fingernail polish. AORN's "Recommended practices for surgical hand sepsis/hand scrubs," recommends that fingernail polish, if worn, should be unchipped and less than four days old.

Wearing artificial or acrylic nails in the surgical setting is unacceptable. Artificial nails may harbor microorganisms and hinder effective hand washing.⁴ According to reports from many state boards of cosmetology, fungal growth occurs under artificial nails from moisture trapped between the natural and artificial nail.⁵

Scrubbing Procedure

The scrub person performs the surgical hand scrub before donning sterile gown and gloves. Before the surgical hand scrub, the scrub person should open the gown package containing a sterile gown, towel, and gloves and place them on a table in the OR. To prevent possible contamination of the sterile field, the main instrument table should not be used for this purpose.⁶

Standardized surgical scrub procedures should be established within each practice setting. Using a standardized surgical scrub procedure establishes a single standard of care. The degree of microbial reduction achieved by the surgical scrub necessary for prophylaxis of surgical site infections is unknown. Health care facilities are encouraged to follow scrub agent manufacturer's written recommendations when establishing policies and procedures for scrub times. These scrub procedures are dependent on what type of product is being used. Either an alcohol-based surgical hand rub product or traditional hand scrub product can be used. Each facility's policies must address which product is to be used.

Remember: Surgical hand antisepsis/hand scrubs are effective only if all surfaces are exposed to the mechanical cleaning and chemical antisepsis processes.

Traditional Hand Scrub Procedure

AORN's "Recommended practice for hand hygiene,"² recommends using a health care organization-approved antiseptic solution with documented persistent and cumulative activity that has met US Food and Drug Administration regulatory requirements for surgical hand antisepsis.

A traditional surgical hand scrub procedure should include the following steps:

1. Remove all jewelry (i.e., rings, watches, bracelets).
2. Don a surgical mask.
3. Wash hands and forearms, if visibly soiled, with soap and running water immediately before beginning the surgical scrub.
4. Clean the subungual areas of both hands under running water using a disposable nail cleaner.
5. Dispense the approved antimicrobial scrub agent according to the manufacturer's written directions.
6. Apply the antimicrobial agent to wet hands and forearms using a soft non-abrasive sponge.
7. Scrub for three to five minutes according to the manufacturer's written directions.
8. Visualize each finger, hand, and arm as having four sides. Wash all four sides thoroughly, keeping the hands elevated. Repeat for opposite fingers, hand, and arm.
9. If possible, turn off water when not in use.
10. Avoid splashing surgical attire.
11. Discard sponges, if used, in appropriate container.
12. Rinse hands and arms under running water in one direction from fingertips to elbows as often as needed.
13. Hold hands higher than elbows and away from surgical attire.
14. In the procedure room, dry hands and arms with a sterile towel before donning a sterile surgical gown and gloves.

The use of a brush for surgical hand scrubs is not necessary to achieve adequate reduction of bacterial counts, nor is it recommended. Using a brush can cause an increase in skin cell shedding, skin damage, and a resultant increase in bacterial load. Using a softer sponge or soft bristle brush will reduce skin damage.

Note: AORN's "Recommended practice for hand hygiene"² references a study of the duration of surgical hand scrubs using ranges from three to five minutes. The results of this study showed that three-minute surgical hand scrubs are just as effective as five-minute surgical hand scrubs.⁶

Alcohol-based Hand Rub Procedure

A standardized surgical hand scrub using an alcohol-based surgical hand rub product should include the following steps:

1. Remove all jewelry (i.e., rings, watches, bracelets).
2. Don a surgical mask.
3. Wash hands and forearms, if visibly soiled, with soap and running water immediately before beginning the surgical scrub.
4. Clean the subungual areas of both hands under running water using a disposable nail cleaner.
5. Rinse hand and forearms under running water.
6. Dry hands and forearms thoroughly with a disposable paper towel.
7. Dispense the approved antimicrobial rub agent according to the manufacturer's written directions.
8. Apply the hand rub agent to the hands and forearms according to the manufacturer's written instructions.
9. Repeat the product application process, as directed.
10. Rub thoroughly until completely dry.
11. In the procedure room, don a sterile surgical gown and gloves.

Drying Hands and Arms

The scrub person must thoroughly dry his or her hands and arms before donning a sterile gown to prevent organisms on the wet skin from soaking through and contaminating the sterile gown. This process, known as strike-through, allows microorganisms from the wet skin or scrub attire to contaminate the sterile gown. To dry the hands, the scrub person:²

1. uses one hand to reach down to the opened sterile package to pick up the towel by one corner, being careful not to drip water onto the gown;
2. grasps the opposing corner of the towel with the other hand and opens the towel full length. The scrub person uses one end of the towel to dry one hand and arm and uses a circumferential motion³ to absorb moisture moving from the hand to the upper arm;
3. bending slightly forward to avoid letting the towel touch the attire, the scrub person holds the dry end of the towel in the dry hand to dry the second arm, using the same technique as used on the first arm; and
4. discards the towel with the hand that is currently holding it without letting it touch the scrub attire.

The scrubbed person must now don a sterile gown and gloves before touching any sterile equipment or the sterile field. The sterile gown and gloves prevent microorganisms from the scrubbed person's hands from contaminating the sterile field and protects the scrubbed person's hands and clothing from microorganisms present in or on the patient.⁷

Gowning and Gloving Techniques

Surgical gowns should be selected by the facility and should meet certain criteria. The materials used in disposable gowns and drapes must be appropriate to the methods used to sterilize these products. They should resist combustion, be comfortable, enable the wearer to maintain an isothermic environment, and demonstrate a favorable cost-benefit ratio.

The gown in its sterile package is folded in such a way that the scrubbed person can put it on without touching the outer (sterile) side with bare hands. The scrubbed person, therefore, may don his or her own surgical gown or be gowned by another scrubbed, gowned, and gloved team member.

Note: The scrubbed person's hands must remain well inside the gown's cuff if he or she plans to use the closed-gloving technique. If using the open-gloving technique, the circulator will reach inside the gown's sleeves and hold the sleeves so that the scrub person can extend their hands through the gown's cuffs.

Self-Gowning Procedure

To don the gown properly, the scrubbed person should:

1. grasp the folded gown at the neckline and lift it directly upward from the sterile package;
2. step back from the table into an unobstructed area;
3. carefully locate the gown's neckband and hold the inside front of the gown just below the neckband with both hands;
4. let the gown unfold keeping the inside of the gown facing his or her body without touching the sterile exterior of the gown (NOTE: If the gown does not unfold completely, the circulating nurse may assist by pulling down the unfolded bottom inside of the gown); and
5. hold the hands at shoulder level and slip both arms into the sleeves of the gown until the hands reach the nearest edge of the cuff.

At this point an unscrubbed person (e.g., circulating nurse) should assist the scrubbed person by:

- reaching inside the gown and adjusting the inside shoulder seam to bring the gown over the scrub person's shoulders;
- touching only the ties, snaps, or hook and loop fastener secure the back of the gown at the neck and the waist; and



- adjust the gown by grasping the bottom edge and pulling it down to eliminate any blousing

After the scrubbed person has donned their gloves, the unscrubbed person can assist with completing the gowning process by taking the tab attached to the front tie presented by the scrubbed person and holding it while the scrubbed person makes a three-quarter turn to wrap the back panel of the gown.

The scrubbed person then carefully retrieves the tie by pulling it out of the tab held by the unscrubbed person, and completes securing the gown by tying this tie to the short end of the waist tie.

Note: If the disposable tab is not present, the scrubbed person can use a sterile instrument to grasp the end of the tie and pass this instrument off to the unscrubbed team member. **This instrument should be counted if the surgical procedure requires counts.**

Assisted Gowning Procedure

A gowned and gloved person may assist another member in drying, gowning, and gloving by

1. grasping and opening the towel that the other member will use to dry his or her hands; and
2. laying the open towel on one of the team member's hands without touching the team member's hands.

When the team member has finished drying his or her hands,

1. the scrubbed person holds the gown open at the shoulders and neckline by cuffing it over his or her hands³ and carefully unfolding it with the inside held away from the body
2. keeping the hands on the outside of the gown, the scrubbed person forms a protective cuff of the gown's neck and shoulder area as the person being gownned extends both arms
3. offers the inside of the gown to the other team member so he or she can slip his or her hands into the sleeves
4. releases the gown when the team member's hands are in the sleeves
5. an unscrubbed person can then tie up the back of the gown and help the newly gownned individual complete securing of the gown



Gloving

An effective surgical hand scrub reduces the number of microorganisms on the hands and arms. Gloves selected for use should provide an effective barrier against infectious materials. Polyvinyl chloride (PVC) or vinyl gloves should not be used for invasive surgical procedures due to a high failure rate. Sterile team members should double glove during all invasive procedures to minimize the risk of exposure to blood. The Centers for Disease Control and Prevention, the American College of Surgeons, and the American Academy of Orthopedic Surgeons, and the Occupational Safety and Health Administration support double-gloving during invasive procedures. A single pair of orthopedic gloves has been shown to provide equal barrier protection to two pairs of standard thickness gloves.

There are two methods of gloving, the closed-gloving technique and the open-gloving technique. The scrubbed person should use the closed gloving technique when **initially** donning a sterile gown and gloves. The closed-gloving technique **should not** be used when the scrubbed person needs to **change** one or both gloves.

In the closed-gloving technique, the scrub person's hands remain inside the sleeves and should not touch the cuffs. In the open-gloving technique, the scrub person's hands slide all the way through the sleeves and out beyond the cuffs.

Closed-Gloving Technique

To don the gloves using the closed gloving technique, the scrubbed person should :

1. keep both hands within the gown cuff so that his or her hands do not extend beyond the cuff edges;
2. open the inner glove wrapper and grasp the folded cuff of the left glove with the right hand;
3. hold the top edge of the cuff in the left hand above the palm;
4. place the palm of the glove against the palm of the left hand - the glove fingers point up the forearm;
5. grasp the back of the cuff in the right hand and turn it over the open end of the left sleeve and hand while holding the top of the left glove and underlying gown sleeve with the covered right hand;
6. pull the glove over the extended left fingers onto the wrist by pushing the hand through the glove until it completely covers the cuff of the gown;
7. glove the right hand in the same manner by reversing the above steps;
8. inspect the gloves for integrity after donning;
9. don a second pair of gloves as indicated; and
10. complete the gowning process as noted above by handing the tie end of the gown to the circulator to secure the wraparound gown.



Open-Gloving Technique

The closed-glove technique should not be used when changing one or both gloves because once the hand has passed through the cuffs, the cuffs are contaminated. When a glove must be changed without assistance during a surgical procedure, the open-glove technique is used. This technique is also used when performing sterile procedures such as bladder catheterization or insertion of an IV cut down, when a gown is not worn. The everted cuff of each glove permits a gowned individual to touch the glove's inner side with ungloved fingers and to touch the glove's outer side with gloved fingers. Extreme caution is necessary when using the open method to prevent contamination by the exposed hands.⁷

In the open-gloving technique, the scrubbed person's hands slide all the way through the sleeves and out beyond the cuffs. To self glove using the open-gloving technique, the scrubbed person

1. picks up the left glove cuff, touching only the everted (i.e., turned down) edge of the cuff with his or her right thumb and index finger;
2. pulls the glove onto the left hand and leaves the glove cuff turned down;
3. picks up the right glove with the gloved left hand, keeping the gloved fingers under the everted cuff;
4. slides fingers of the right hand inside the right glove cuff and pulls the glove onto the right hand avoiding inward rolling of the cuff;
5. pulls the right glove cuff over the sleeve cuff by rotating the arm;
6. places the fingers of the gloved right hand under the folded left glove cuff, rotates the arm, and pulls the left glove cuff over the sleeve cuff; and
7. inspects the gloves for integrity before donning a second pair as indicated.



Changing Gloves

It may become necessary to change gloves during a surgical procedure. The following outlines the steps needed to change one or both gloves.

To change one glove unassisted during the procedure using the open-glove technique, the scrubbed person:²

1. steps away from the sterile field;
2. extends the contaminated glove away from the sterile field so that the circulator, using exam gloves to protect his or her hands, can remove it;
3. lifts the new sterile glove under the cuff with the uncontaminated gloved hand;
4. inserts the hand into the glove and pulls it on, leaving the cuff turned well down over the hand and avoiding inward rolling of the cuff. The bare hand does not touch the outside of the glove;
5. rotates the arm and pulls the cuff of the glove up and over the sleeve cuff, letting the gloved fingers touch only the outside of the other glove; and
6. inspects the glove for integrity before donning a second glove as indicated.

To change both gloves unassisted during a procedure using the open-gloving technique, the scrub person:

1. follows instructions one and two above;
2. picks up the left glove cuff, touching only the edge of the cuff with his or her right thumb and index finger;
3. pulls the glove onto the left hand and leaves the glove cuff turned down;
4. picks up the right glove with the gloved left hand, keeping the gloved fingers under the folded cuff;
5. slides the right hand fingers inside the right glove cuff and pulls the glove onto the right hand while avoiding inward rolling of the cuff;
6. pulls the right glove cuff over the sleeve cuff by rotating the arm; and
7. places the gloved right hand fingers under the folded left glove cuff, rotates the arm, and pulls the left glove cuff over the sleeve cuff.
8. Dons a second pair of gloves as indicated.

Assisted Gloving

To glove another team member, the scrub person always gloves the other person's right hand first. The scrub person:²

1. picks up the glove with his or her fingers under the cuff;
2. holds the palm of the glove toward the person being gloved;
3. stretches the cuff to open the glove and holds his or her thumbs out to keep them from touching the other team member's bare hands;
4. as the other person inserts his or her hand into the glove, exerts upward firm pressure making sure the hand does not go below the waist;
5. unfolds the everted glove cuff over the cuff of the sleeve; and
6. gloves the left hand with the assistance of a team member by repeating the steps.



Changing Gloves - Assisted Regloving

When a team member other than the scrub nurse contaminates a glove during the surgical procedure, the circulator, using exam gloves so that his or her hands are protected, grasps the outside of the contaminated glove and pulls it off inside out. The scrub nurse then regloves the team member as described above in assisted gloving.

The options for the scrub nurse who needs to change gloves are to:

- remove both gown and gloves, (the scrub nurse must perform a surgical scrub/hand rub prior to regowning and regloving)
- have another team member assist in regloving, or
- use the open-glove technique.

Note: The closed-glove technique cannot be used to reglove. In closed gloving, the hand passes through the cuff of the gown, contaminating the edge of the cuff. This would cause the outside of the new glove to be contaminated.

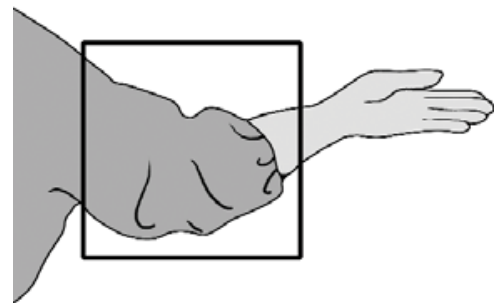
Maintaining a Sterile Field

The surgical team should take precautions to maintain the sterile field and avoid its contamination. Certain rules regarding sterile attire must be followed to do this. All individuals who are scrubbed must keep their hands above waist level and in sight at all times. The underarms of the gown are considered unsterile; therefore, hands should not be placed under the arms. The back of the gown is not considered sterile even if it is a wraparound style gown. The sterile areas of a gown include:

- the front of the gown from the table level or level of the sterile field to two inches below the neck



- the sleeves from two inches above the elbow to the cuff



- the surgical gloves

Note: If any part of the sterile attire becomes contaminated, immediate corrective steps must be taken (e.g., if a glove becomes contaminated or perforated during surgery, it must be changed immediately). After the original gloves are donned, scrubbed personnel should consider the gown's cuffs contaminated because the scrubbed person's hands have passed through the cuffs.

Removing Gowns and Gloves

At the end of the procedure, the scrubbed person should always remove his or her gown before removing gloves to prevent cross contamination of their regular surgical attire. The circulator can assist by unfastening the neck and back closures of the gown. The scrubbed person then grasps the shoulders of the gown, pulls it downward from the shoulders and off the arms.



The sleeves should be turned inside out. The scrubbed person then folds the contaminated surface of the gown to the inside, rolls it away from the body, and discards the rolled gown in the appropriate receptacle.



As the gown comes off, it usually turns the cuffs of the gloves down. To remove the gloves, the wearer uses a glove-to-glove then a skin-to-skin technique. This approach protects the hands from the contaminated glove.

To do this, the scrub person:

1. grasps under the cuff of the left glove with gloved fingers of the right hand and pulls the left glove off inside out;
2. he or she slips the ungloved fingers of the left hand inside the right glove and slips it off inside out;
3. the scrubbed person discards the gloves in the appropriate receptacle; and
4. washes his or her hands and arms with soap and water



Removing the gloves after removing the gown prevents the scrubbed person's bare hands from contamination that would occur from handling the soiled gown.

Summary

The principles that have been outlined in this study guide for scrubbing, gowning, and gloving prevent contamination to the surgical wound and help control infections. It is the individual responsibility of each surgical team member to exercise their surgical conscience and conscientiously practice these principles for his or her own safety and the safety and protection of the surgical patients.

Glossary

Aseptic technique: Methods used to prevent contamination with microorganisms.

Asepsis: Process for reducing or eliminating disease-producing microorganisms.

Assisted gloving method: Used by a gowned and gloved person to assist another gowned person to don sterile gloves.

Closed gloving method: Used when wearing a sterile gown to prevent exposure of bare skin during gowning and donning of sterile gloves.

Fomite: Inanimate particles that may be contaminated with infectious organisms and have the ability to transmit disease.

Hand hygiene: all measures related to the condition and decontamination of the hands.

Microorganisms: Live organisms of microscopic or submicroscopic size, especially a bacterium or protozoan.

Open-gloving method: A method of donning sterile gloves in which the everted cuff of each glove allows the gowned person to touch the inner side of the glove with ungloved fingers and the outer side of the glove with gloved fingers. Used when changing a glove during a surgical procedure.

Pathogen: Any disease-producing agent or microorganism.

Resident organisms: Microorganisms considered to be permanent residents of the skin and not readily removed by hand washing.

Sterile: The absence of all living microorganisms.

Sterile field: Area around the site of the incision into tissue or the site of introduction of an instrument into a body orifice that has been prepared for the use of sterile supplies and equipment. This area includes all furniture covered with sterile drapes and all personnel who are in sterile attire.

Sterile technique: Methods by which contamination with microorganisms is prevented to maintain sterility during the surgical procedure.

Strike-through: Contamination of a sterile surface by moisture that has originated from a nonsterile surface and penetrated the protective covering of the sterile item.

Transient organisms: Microorganisms isolated from the skin. Such microorganisms are of concern because they can be transmitted readily on hands unless removed by mechanical friction and soap and water hand washing or use of a hand rub agent.

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Hand Hygiene, Gowning, and Gloving Practices in the Perioperative Setting

POST TEST

1. All of the following statements apply when drying the hands and arms except:
 - a. bend over slightly from the waist.
 - b. begin drying with the hand and move up the arm.
 - c. dry thoroughly to avoid skin irritation.
 - d. roll the towel before discarding into the appropriate container.
2. The closed-glove technique is used:
 - a. only when the hands have never passed through the gown cuffs.
 - b. when regloving without assistance during the procedure.
 - c. to assist a surgeon in donning sterile attire.
 - d. as a method for correcting glove contamination.
3. When a scrub person assists another team member with gowning and gloving, he or she does all of the following except:
 - a. protect gloved hands by forming a cuff of the neck and shoulder area.
 - b. release the gown when the team member's hands are in the sleeves.
 - c. handle the glove on the inside only.
 - d. always offer the right glove first.
4. The sterile areas of the gown include the:
 1. front from two inches below the neck to waist or table level.
 2. gloves and gown sleeve to two inches above the elbow.
 3. sides from axillae to waist or table level.
 4. back of a wraparound gown.
 - a. 1 and 2
 - b. 1 and 3
 - c. 1, 2, and 3
 - d. 1, 2, 3, and 4
5. The use of a brush for surgical hand scrubs is not necessary.
 - a. True
 - b. False
6. During gowning, the circulating nurse can assist the scrub person by:
 - a. pulling the bottom edge of the front of the gown to eliminate blousing.
 - b. helping to get the creases out of the gown's sleeves by pulling the shoulders up.
 - c. reaching inside the gown and pulling the inside seam.
 - d. all of the above.
7. When taking off the gown at the end of the case, the gloves' cuffs usually turn down as the sleeves pass off the arms. The wearer removes the gloves using which one of the techniques listed below?
 - a. pull off by fingers of each glove
 - b. glove-to-glove and then skin-to-skin.
 - c. open-glove technique.
 - d. Scrubbed person's choice if gloves are not too dirty
8. When one or both gloves must be changed without assistance, which one of the following methods listed below should be used?
 - a. double gloving
 - b. open-glove technique
 - c. barehanded gloving
 - d. closed-glove technique
9. When a team member other than the scrub nurse contaminates a glove during the surgical procedure, the scrub nurse regloves the team member using which one of the following methods?
 - a. assisted gloving
 - b. reverse gloving
 - c. protected gloving
 - d. open gloving
10. When performing a surgical scrub with an antimicrobial agent, how far up the arm must an individual scrub?
 - a. up to the armpit
 - b. two inches above the elbow
 - c. to the elbow
 - d. four inches above the wrist

11. The purpose of the surgical hand scrub is to:
1. remove normal skin flora.
 2. sterilize the skin.
 3. suppress growth of microorganisms.
 4. remove soil and debris.
- a. 1 and 3
 - b. 2 and 3
 - c. 3 and 4
 - d. 1, 2, 3, and 4
12. Where should the scrubbed person hold onto his or her gown when lifting it up to don it?
- a. the sterile exterior of the gown
 - b. the inside seams at armpits
 - c. the inside front of the gown just below the neckband
 - d. at the waist
13. Resident microorganisms:
1. live on the skin's surface.
 2. are easy to remove.
 3. live in hair follicles and sweat glands.
 4. are acquired by direct contact.
- a. 1 only
 - b. 1 and 2
 - c. 3 only
 - d. 2 and 3
14. Appropriate surgical attire for the scrub person includes:
1. headgear that covers all hair.
 2. protective eyewear.
 3. a face mask.
 4. shoes that provide protection.
- a. 1 and 3
 - b. 1, 2, and 3
 - c. 2, 3, and 4
 - d. 1, 2, 3, and 4
15. It is permissible to scrub without removing rings.
- a. True
 - b. False
16. Wearing artificial or acrylic nails in the surgical setting is:
- a. permitted if they are in good repair.
 - b. unacceptable because they may harbor microorganisms.
 - c. permitted if polish is less than four days old.
 - d. unacceptable for aesthetic reasons.
17. The scrub person may use the closed-glove method to change one or both gloves if they become contaminated.
- a. True
 - b. False

**Hand Hygiene, Gowning, and Gloving Practices
in the Perioperative Setting
Answer Sheet**

1. D
2. A
3. C
4. A
5. A
6. D
7. B
8. B
9. A
10. B
11. C
12. C
13. C
14. D
15. B
16. B
17. B

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